

1  
2       CLAIMS

3       1. A skin comprising:

4              one or more computer-readable media;

5              at least one skin definition file resident on the one or more computer-  
6              readable media, the skin definition file defining a skin and being defined in a  
7              hierarchical tag-based language.

8  
9       2. The skin of claim 1 further comprising one or more art files resident  
10      on the computer-readable media, the art files containing images associated with  
11      the skin.

12  
13      3. The skin of claim 2, wherein at least one art file defines a primary  
14      image that can be viewed by a user when the skin is installed.

15  
16      4. The skin of claim 3, wherein at least one art file defines a secondary  
17      image that is viewable in response to a user action.

18  
19      5. The skin of claim 2, wherein at least one art file defines a mapping  
20      image to specify skin regions that respond to user input.

21  
22      6. The skin of claim 1 further comprising one or more script files  
23      resident on the computer-readable media, the script files defining responses to  
24      various events to give the skin a degree of interactivity.

1       7. The skin of claim 6, wherein at least one event comprises an internal  
2 event that is associated with an application with which the skin is associated.

3  
4       8. The skin of claim 6, wherein at least one event comprises an external  
5 event that is associated with a user of an application with which the skin is  
6 associated.

7  
8       9. The skin of claim 1, wherein the skin definition file comprises an  
9 XML file.

10  
11      10. A skin comprising:  
12           one or more computer-readable media;  
13           at least one skin definition file resident on the one or more computer-  
14 readable media, the skin definition file defining a skin and being defined in a  
15 hierarchical tag-based language;  
16           one or more art files resident on the computer-readable media, the art files  
17 containing images associated with the skin, at least one art file defining:  
18                a primary image that can be viewed by a user when the skin is  
19 installed,  
20                a secondary image that is viewable in response to a user action, and  
21                a mapping image to specify skin regions that respond to user input;  
22           and  
23           one or more script files resident on the computer-readable media, the script  
24 files defining responses to various events to give the skin a degree of interactivity.

1       **11.** An XML data structure comprising multiple tag pairs, individual tag  
2 pairs being associated with and referencing information that can be utilized to  
3 render a skin.

4

5       **12.** The XML data structure of claim 11, wherein one or more of the tag  
6 pairs are associated with individual skin elements and reference information that  
7 defines how a skin looks and how the skin elements are laid out.

8

9       **13.** The XML data structure of claim 11, wherein one or more of the tag  
10 pairs are associated with individual skin elements and reference information that  
11 defines how a skin looks, how the skin elements are laid out, and how at least one  
12 portion of the skin functions.

13

14       **14.** The XML data structure of claim 11, wherein the tag pairs  
15 collectively reference information associated with a background image and images  
16 associated with individual skin elements.

17

18       **15.** The XML data structure of claim 11, wherein at least one tag pair  
19 contains information that establishes a color mapping relationship between one or  
20 more skin elements and associated colors in an image map.

21

22       **16.** The XML data structure of claim 11, wherein at least one tag pair  
23 contains information associated with at least one subview that defines a subsection  
24 within a skin that can be moved or hidden.

1       **17.** A skin comprising:

2              one or more computer-readable media; and

3              at least one skin definition file resident on the one or more computer-  
4              readable media, the skin definition filing comprising an XML file that contains  
5              information associated with the skin, the XML file comprising a root tag pair, and  
6              at least one other tag pair that is a child to the root tag pair and that is associated  
7              with a particular viewable image that comprises the skin.

8

9       **18.** The skin of claim 17, wherein said at least one other tag pair  
10     contains one or more tag pairs that are associated with specific skin elements.

11

12       **19.** The skin of claim 18, wherein said specific skin elements comprise  
13     skin controls.

14

15       **20.** The skin of claim 17, wherein said at least one other tag pair  
16     contains information that establishes a color mapping relationship between one or  
17     more skin elements and associated colors in an image map.

18

19       **21.** The skin of claim 17, wherein said at least one other tag pair  
20     contains information associated with at least one subview, the subview defining a  
21     subsection within a skin that can be moved or hidden.

22

23       **22.** A skin-organizing method comprising:

24              providing one or more file types that define different aspects of a skin; and  
25              organizing the files types using a hierarchical tag-based structure.

1  
2       **23.** The skin-organizing method of claim 22, wherein at least one of the  
3 file types is associated with an image that defines aspects of a skin's appearance.  
4

5       **24.** The skin-organizing method of claim 22, wherein at least one of the  
6 file types is associated with script that provides a skin's interactivity.  
7

8       **25.** The skin-organizing method of claim 22, wherein the file types  
9 permit the skin's layout and look to be modified.  
10

11       **26.** The skin-organizing method of claim 22, wherein the file types  
12 permit the skin's functionality and look to be modified.  
13

14       **27.** The skin-organizing method of claim 22, wherein the file types  
15 permit the skin's layout and functionality to be modified.  
16

17       **28.** The skin-organizing method of claim 22, wherein the file types  
18 permit the skin's layout, look, and functionality to be modified.  
19

20       **29.** The skin-organizing method of claim 22, wherein said organizing  
21 comprises doing so using an XML data structure.  
22

23       **30.** A method of providing a skin comprising:  
24           defining a primary image containing one or more user-viewable elements  
25           associated with the skin;

1 defining a mapping image having one or more colors, each color defining a  
2 region of the mapping image; and

3 associating individual color regions of the mapping image with individual  
4 user-viewable elements of the skin, wherein when the skin is rendered, each color  
5 region defines an area of the skin that is dedicated to its associated user-viewable  
6 element.

7  
8       **31.** The method of claim 30, wherein said associating comprises doing  
9 so using an XML data structure.

10  
11      **32.** The method of claim 31, wherein using an XML data structure  
12 comprises:

13           defining a first XML tag pair that references the mapping image; and  
14           defining one or more second XML tag pairs that are children of the first  
15 XML tag pair, each second tag pair being associated with a user-viewable element  
16 and containing at least one attribute that is assigned a color in the mapping image.

17  
18      **33.** One or more computer-readable media having computer-readable  
19 instructions thereon which, when executed by a computer, cause the computer to:

20           receive a primary image containing one or more user-viewable elements  
21 associated with a skin;

22           receive a mapping image having one or more colors, each color defining a  
23 region of the mapping image; and

24           establish a relationship between individual colors in the mapping image and  
25 individual user-viewable elements, wherein when the skin is rendered, each color

1 region defines an area of the skin that is dedicated to its associated user-viewable  
2 element.

3

4 **34.** A skin-rendering computer architecture comprising:

5 a layout manager configured to process a hierarchical data structure  
6 associated with a skin, the hierarchical data structure containing information that  
7 can be used by the layout manager to render the skin; and

8 one or more rendering elements associated with the layout manager, each  
9 rendering element being associated with a skin element and being configured for  
10 use in rendering their associated skin element.

11

12 **35.** The skin-rendering computer architecture of claim 34, wherein the

13 layout manager comprises an object model builder configured to process the  
14 hierarchical data structure and, responsive thereto, create the one or more  
15 rendering elements.

16

17 **36.** The skin-rendering computer architecture of claim 34 further

18 comprising a script engine operably associated with the layout manager and  
19 configured to receive and execute script associated with one or more of the  
20 rendering elements, the script defining a degree of interactivity for the skin.

1           **37.** The skin-rendering computer architecture of claim 34, wherein:  
2           the layout manager comprises an object model builder configured to  
3           process the hierarchical data structure and, responsive thereto, create the one or  
4           more rendering elements; and

5           further comprising a script engine operably associated with the layout  
6           manager and configured to receive and execute script associated with one or more  
7           of the rendering elements, the script defining a degree of interactivity for the skin.

8  
9           **38.** The skin-rendering computer architecture of claim 34, wherein the  
10          layout manager is configured to:

11           process a hierarchical data structure that is derived from an XML file that  
12          describes the skin and its attributes; and

13           create the one or more rendering elements based on information contained  
14          in the hierarchical data structure.

15  
16           **39.** The skin-rendering computer architecture of claim 34, wherein the  
17          layout manager is configured to process the hierarchical data structure and provide  
18          a scriptable object model therefrom.

19  
20           **40.** A computing device embodying the computer architecture of claim  
21          34.

1       **41.** A skin-rendering computer architecture comprising:

2              a layout manager configured to process a hierarchical data structure  
3              associated with a skin, the hierarchical data structure containing information that  
4              can be used by the layout manager to render the skin;

5              one or more rendering elements associated with the layout manager, each  
6              rendering element being associated with a skin element and being configured for  
7              use in rendering their associated skin element; and

8              a script engine operably associated with the layout manager and configured  
9              to receive and execute script associated with one or more of the rendering  
10             elements, the script defining a degree of interactivity for the skin.

11  
12       **42.** The skin-rendering computer architecture of claim 41 further  
13              comprising an XML parser for parsing an XML file to provide the hierarchical  
14              data structure.

15  
16       **43.** The skin-rendering computer architecture of claim 41, wherein the  
17              layout manager comprises an object model builder configured to process the  
18              hierarchical data structure and, responsive thereto, create the one or more  
19              rendering elements.

20  
21       **44.** A computer device embodying the computer architecture of claim  
22              41.

1       **45.** A method of providing a skin model for use in rendering a skin, the  
2 method comprising:

3           receiving a skin definition file that contains information associated with a  
4 skin, and one or more other files that are associated with the skin;

5           providing at least some of the one or more other files directly into computer  
6 memory, without the files entering a computer file system; and

7           processing the skin definition file to provide a hierarchical data structure  
8 that describes the skin.

9  
10       **46.** The method of claim 45, wherein the skin definition file comprises  
11 an XML file.

12  
13       **47.** The method of claim 45 further comprising processing the  
14 hierarchical data structure to provide one or more rendering elements, each  
15 rendering element being associated with a skin element and being configured for  
16 use in rendering their associated skin element.

17  
18       **48.** The method of claim 47 further comprising processing the  
19 hierarchical data structure to provide a script engine configured to execute script  
20 associated with the skin.

1           **49.** The method of claim 48 further comprising processing the  
2 hierarchical data structure to provide one or more events to the script engine, the  
3 script engine being programmable to take a definable action in connection with the  
4 occurrence of the one or more events, the definable action providing a degree of  
5 interactivity for the skin.

6  
7           **50.** The method of claim 49, further comprising processing the  
8 hierarchical data structure to provide one or more script files to the script engine,  
9 the script files defining the action that provides the degree of interactivity for the  
10 skin.

11  
12          **51.** One or more computer-readable media having computer-readable  
13 instructions thereon which, when executed by a computer, cause the computer to  
14 implement the method of claim 45.

15  
16          **52.** A method of providing a skin model for use in rendering a skin, the  
17 method comprising:

18           receiving a skin definition file that contains information associated with a  
19 skin, and one or more other files that are associated with the skin, the skin  
20 definition file comprising an XML file;

21           processing the skin definition file to provide a hierarchical data structure  
22 that describes the skin; and

23           processing the hierarchical data structure to provide an object model for  
24 rendering the skin.

1       **53.** The method of claim 52, wherein the object model comprises one or  
2 more rendering elements, each rendering element being associated with a skin  
3 element and being configured for use in rendering their associated skin element.

4

5       **54.** The method of claim 53, wherein the object model comprises a  
6 script engine configured to receive and execute script files associated with one or  
7 more of the rendering elements, the script files defining a degree of interactivity  
8 for the skin.

9

10      **55.** The method of claim 54, wherein the processing of the hierarchical  
11 data structure comprises providing one or more events to the script engine, the  
12 script engine being programmable to take a definable action in connection with the  
13 occurrence of the one or more events.

14

15      **56.** The method of claim 55, wherein the processing of the hierarchical  
16 data structure comprises providing one or more script files to the script engine.

17

18      **57.** One or more computer-readable media having computer-readable  
19 instructions thereon which, when executed by a computer, cause the computer to:

20           receive a skin definition file that contains information associated with a  
21 skin, and one or more other files that are associated with the skin, the skin  
22 definition file comprising an XML file;

23           process the skin definition file to provide a hierarchical data structure that  
24 describes the skin; and

1 process the hierarchical data structure to provide an object model for  
2 rendering the skin, the object model comprising:

3 one or more rendering elements, each rendering element being  
4 associated with a skin element and being configured for use in rendering  
5 their associated skin element; and

6 a script engine configured to receive and execute script files  
7 associated with one or more of the rendering elements, the script files  
8 defining a degree of interactivity for the skin.

9  
10 **58.** A method of providing a skin comprising:

11 rendering a skin;

12 ascertaining whether a defined event associated with the rendered skin has  
13 occurred; and

14 responsive to the defined event occurring, re-rendering the skin, said re-  
15 rendering taking place at runtime.

16  
17 **59.** The method of claim 58, wherein said event comprises an external  
18 event.

19  
20 **60.** The method of claim 58, wherein said event comprises an internal  
21 event.

22  
23 **61.** The method of claim 58, wherein said ascertaining takes place at  
24 runtime.

1           **62.**   The method of claim 58, wherein said ascertaining is performed by a  
2 script engine that is programmed with one or more events and script files that are  
3 related to the events and executed by the script engine.

4

5           **63.**   The method of claim 62, wherein said re-rendering comprises the  
6 script engine calling one or more rendering elements that are associated with at  
7 least a portion of the skin to notify the one or more rendering elements that they  
8 must be re-rendered.

9

10          **64.**   The method of claim 63, wherein said calling comprises providing  
11 one or more parameters associated with the re-rendering to the one or more  
12 rendering elements.

13

14          **65.**   One or more computer-readable media having computer-readable  
15 instructions thereon which, when executed by a computer, cause the computer to:

16           render a skin;

17           ascertain whether a user-defined event associated with the rendered skin  
18 has occurred; and

19           responsive to the defined event occurring, re-render the skin, said re-  
20 rendering taking place at runtime.

21

22          **66.**   The computer-readable media of claim 65, wherein the instructions  
23 cause the computer to:

24           ascertain whether an internal event has occurred; and

25           responsive to the internal event occurring, re-render the skin.

1  
2       **67.** A method of rendering a skin comprising:

3             defining one or more subviews, each subview corresponding to a  
4 subsection within a skin that can be moved or hidden;

5             defining multiple visible regions, individual visible regions being  
6 associated with the one or more subviews, the visible regions representing  
7 individual areas to which their associated one or more subviews are drawn;

8             defining a tree structure having multiple nodes, each node being associated  
9 with a visible region and having one or more attributes;

10            recalculating a visible region for a node responsive to an attribute change  
11 for the visible region;

12            recalculating a visible region associated with a parent node of said node;

13 and

14            after said acts of recalculating, re-rendering a skin associated with the tree  
15 structure.

16  
17       **68.** The method of claim 67, wherein said defining of the one or more  
18 subviews comprises doing so using an XML data structure.

19  
20       **69.** The method of claim 67, wherein said recalculating of the visible  
21 region associated with the parent node comprises summing multiple visible  
22 regions.

1           **70.** The method of claim 67, wherein said re-rendering takes place at  
2 runtime.

3

4           **71.** The method of claim 67, wherein said defining of the tree structure  
5 comprises doing so at runtime.

6

7           **72.** One or more computer-readable media having computer-readable  
8 instructions thereon which, when executed by a computer, cause the computer to:

9                 define one or more subviews using an XML data structure, each subview  
10 corresponding to a subsection within a skin that can be moved or hidden;

11                 define multiple visible regions, individual visible regions being associated  
12 with the one or more subviews, the visible regions representing individual areas to  
13 which their associated one or more subviews are drawn;

14                 define a tree structure having multiple nodes, each node being associated  
15 with a visible region and having one or more attributes;

16                 recalculate a visible region for a node responsive to an attribute change for  
17 the visible region;

18                 recalculate a visible region associated with a parent node of said node; and

19                 responsive to said acts of recalculating, re-render a skin associated with the  
20 tree structure.